ENGINEERING REPORT

for

CONTRACT NO. DACW 33-83-D-0006
WORK ORDER NO. 0029

SUBSURFACE INVESTIGATION OF TEN MILE RIVER

PROPOSED CHANNEL INPROVEMENTS

Located in

CHESHIRE, CONNECTICUT

Prepared for:

U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, MA 02254

Project No. 60258
August 14, 1985

EGA

EGA
EASTERN GEOTECHNICAL ASSOCIATES • BRIGGS
164 Washington Street, Norwell, MA 02061 ▶ Telephone (617) 773-1744

August 14, 1985
Project No. 60258

U.S. ARMY CORPS OF ENGINEERS
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254

ATTENTION: Edward D. Hammond, Ltc, CE

RE: Contract DACW-33-83-C-0006
Work Order No. 0029

Dear Mr. Hammond:

In accordance with Work Order No. 0029, dated 22 May 1985, attached is one final copy of our Engineering Report for the subsurface investigation performed at Ten Mile River; Cheshire, CT for determination of foundation conditions for proposed channel improvements.

If you have any questions or comments, please do not hesitate to call.

Very truly yours,

Nicholas A. Lanney

Nicholas A. Lanney, P.E.

NAL:cc

Attachments

TABLE OF CONTENTS

1.0 GENERAL

1.1 Authorization

The work reported herein was performed under Contract DACW 33-81-D-0006, Work Order Number 0029, dated 22 May 1985. The authority for this project was derived from Section 205 of the 1948 Flood Control Act.

1.2 Project Site

The site is located in Cheshire, CT at the Ten Mile River.

1.3 Purpose

The purpose of this work was to determine the foundation conditions adjacent to the Ten Mile River for proposed channel improvement project.

1.4 Scope of the Investigation

Inspection and exploration instructions, which were provided by the Army Corps of Engineers, New England Division, are included in Appendix A. The subsurface investigation program employed continuous drive sample borings to specified depths at four locations.

Work under this delivery order consisted of locating four drive sample borings by means of taping off known features as shown on Figure 1. Elevations were estimated from this plan provided by the U.S. Army Corps of Engineers.

The drive sample borings were performed in accordance with paragraph "7" page C-11 of the specifications using a solid-barrel sampler with sampling intervals of 5 ft. The borings were taken to the specified depths as given in the delivery order. The field logs for the test borings are included as Appendix D.

2.0 QUALITY CONTROL

2.1 Equipment

The following equipment and tools were used to perform the work:

a. Core Drill: The core drill used was a modern hydraulically driven rotary head unit manufactured by Mobile Drill Company. The model # is B-40.

b. Drive Hammer: The drive hammer used to advance the solid-barrel sampler and drill rods for probes weighed approximately 300 pounds.

c. Casing and Rods: 4" I.D. Hollow stem augers were used to keep the borehole open. AW-size drill rods were used in driving the solid-barrel sampler.

d. Samplers: The equipment employed to obtain soil samples was a solid-barrel sampler 5.0 ft in length with an inside diameter of 2-1/2"

2.2 Records

NED Forms 121, 58 and 58A wre used to record pertinent drilling and sampling operations. The boring logs include the following information:

(1) Name of project.

(2) Site location designation.

(3) Ground elevation at location of exploration.

(4) Date exploration performed.

(5) Method of penetration.

(6) Depth of penetration.

(7) Density of material encuntered.

(8) Name of driller and Field Inspector.

(9) Blows/foot of penetration.

The test boring logs contained the following information:

(1) Hole number, hole designation and elevation of top of hole.

(2) Make and manufacturer's model designation of equipment.

(3) Type of drilling and sampling operation by depth.

(4) Date when drilling and sampling operations were performed.

(5) Depths at which sample or cores were recovered or attempts made to sample including top and bottom depths of each sampling interval. Classification or description including geologic and common usage designation such as till, fluvial deposits, etc. by depths of materials sampled or penetrated including a description of moisture conditions, color and conditions of compactness or stiffness of soils materials encountered. Record of penetration resistance such as drive hammer blows given in blows per six inches of penetration depth for driving sample spoons.

(6) Depth to bottom of hole.

3.3 Procedures

a. Boreholes were advanced by sampling in which a 2-1/2 inch I.D. by 5.0 foot solid-barrel sampler was advanced from the ground surface and below the bottom of the 4" hollow stem augers into undisturbed soil by the impact of a hammer weighing approximately 300 pounds, falling 18 inches. Refusal was defined as 100 blows with no peneration or bouncing refusal.

b. The sample spoon shoes were kept reasonable sharp at all times. Dull, bent, or otherwise damaged samplers were not used. Following sampling, the augers were advanced to the next sampling depth.

c. Samples were classified in the field immediately following the taking of the sample. Classification was in accordance with ASTM D-2487 and D-2488. Representative samples were taken from each soil sampling run and placed in 16 oz. glass jars with hermetically sealed lids. Jars were labeled with sample number, sampling interval, boring number, date,, location, and soil description. A chain of custody log was maintained documenting custody of the samples between the field and transportation and delivery to the laboratory at NED.

d. The location of test borings designated B-1 through B-4 were located by taping from known features.

4.0 QUALITY CONTROL CERTIFICATION

I hereby certify that the above-mentioned records, equipment, and procedures were used to perform the subsurface exploration described herein. I also certify that the work was performed in a professional manner and meets the requirements set forth in the work order.

Certified 14 August 1985

Nicholas A. Lanney

Nicholas A. Lanney, P.E.

ATTACHMENTS

Table 1

Figure 1

Appendix A

Appendix B

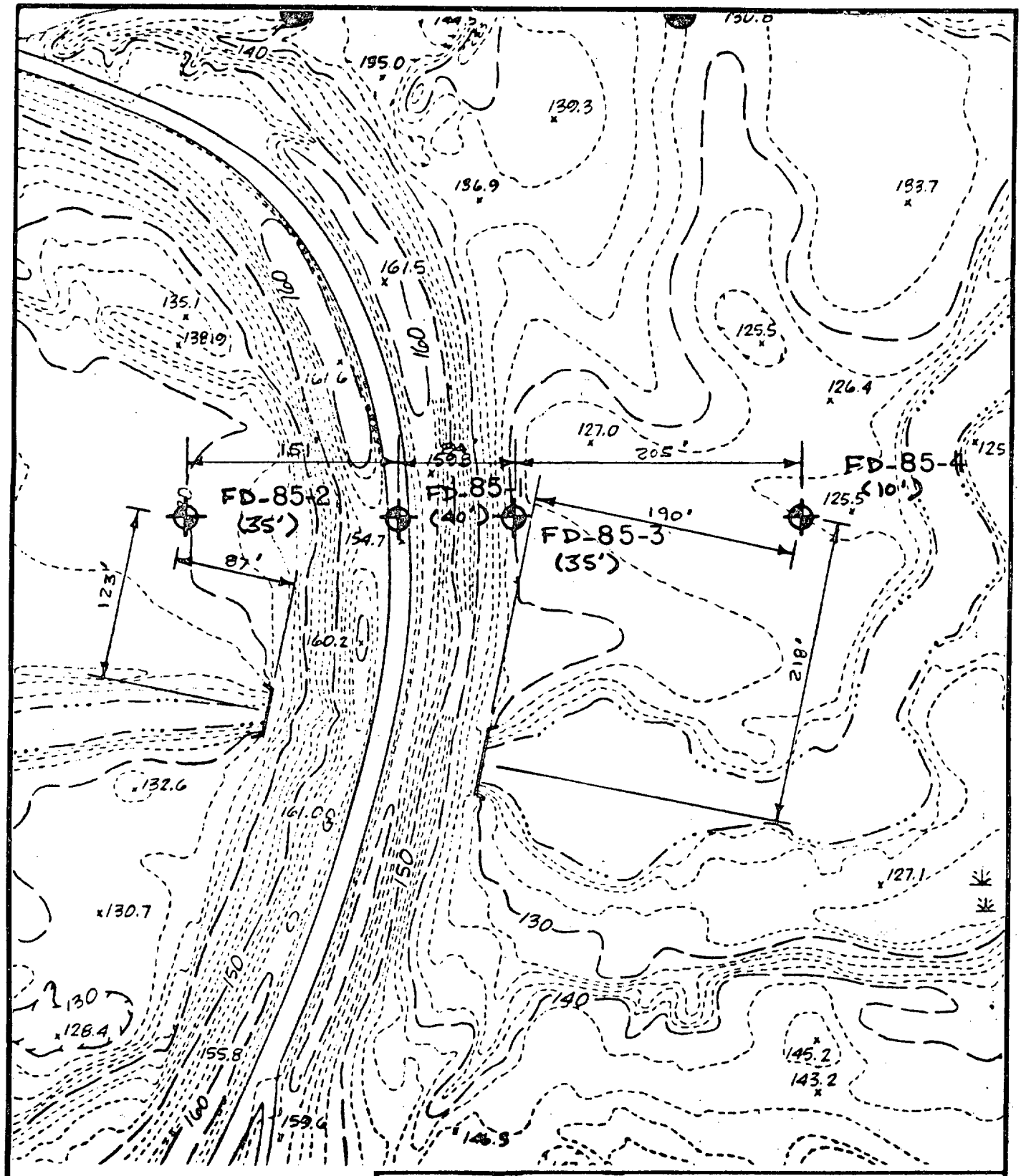
Appendix C

Appendix D

TABLE 1

SUMMARY OF ACTIVITIES

DATE	ACTIVITY
17 June	Mobilized to site and set up on FD-85-1 "B". Started at 1200 hours, completed FD-85-1 and set up on FD-85-2. Drilled to 10 feet on FD-85-2. One hour standby, on site move. Finished work 2000 hours.
18 June	Started 0630 hours, completed FD-85-2 and set up on FD-85-3. Completed FD-85-3 and set up on FD-85-4. Completed FD-85-4 and demobilized from site. Two hours standby, on site moves. Ended work 1930 hours.



LEGEND

FD-85-1 — Exploration Number

⊕ —— Exploration Location

(15') — Proposed Depth of Exploration

TEN MILE RIVER CHESHIRE, CONNECTICUT
EXPLORATION PLAN

EGA
EASTERN GEOTECHNICAL ASSOCIATES • BRIDGE

DR. BY:	SCALE: 1" = 100'	PROJ. NO. 0029
CK'D BY:	DATE: 5 Apr. 85	FIG. NO. 1

APPENDIX A

Inspection & Exploration Instructions

ATTACHMENT NO. 1

GEB REQUISITION NO. 85-54, DELIVERY ORDER NO. 0029

INSPECTION AND EXPLORATION INSTRUCTIONS

PROJECT: Ten Mile River Study

SITE: Ten Mile River, Cheshire, Connecticut (See Attachment No. 2)

AUTHORITY: The Ten Mile River Study is funded under the authority of Section 205 of the 1948 Flood Control Act.

PURPOSE: The subsurface investigations are to determine the foundation conditions adjacent to the Ten Mile River for the proposed channel improvement project.

1. SCOPE OF INVESTIGATION

a. Locate four (4) drive sample borings by means of taping the given distances as indicated on Attachment No. 3. Elevations for the borings and probes will be estimated based on the contours shown on Attachment 3.

b. The four continuous drive sample borings shall be driven to the depths as follows: A-35', B-40', C-35' and D-10'. The sampling work shall be in accordance with paragraph 7, page C-11 of the specifications. Where refusal is encountered before required depth is attained in a borehole, the boring shall be continued using vertical diamond core drilling. If the material causing refusal is not penetrated within five feet of the original refusal elevation, the boring shall be terminated.

c. A geotechnical inspector shall act as field inspector while performing the borings. The inspector shall provide telephone reports to Mr. Wong, Corps of Engineers, at 617-647-8177 at least once a day.

d. All samples shall be delivered to the Corps of Engineers Headquarters in Waltham, Massachusetts by the field inspector. Sample delivery shall be coordinated with the Director, NED Materials and Water Quality Laboratory at 617-647-8357/8392.

2. SITE CONDITIONS

The proposed exploration program is along the Ten Mile River in Cheshire, Connecticut. The proposed explorations are on relatively flat grassy areas.

3. RIGHTS OF ENTRY

The Contractor is responsible for securing any rights of entry, approvals, permits, etc. necessary for the performance of the work (Imperial Spring Co., Inc. 339 Clark Street, Cheshire, Connecticut).

4. COORDINATION

Mr. Terrance Wong, Corps of Engineers, 617-647-8177, shall be contacted five days prior to start of work and at least once a day by the geotechnical inspector to report on how work is progressing and what types of materials are being encountered.

5. EXPLORATION NUMBERS

The drive boring locations as shown on Attachment No. 3 and designated A-D shall be numbered FD-85-1 through FD-85-4 in order of their completion. The new numbers shall be indicated on the boring logs and shown on a plan of explorations.

6. GOVERNMENT REVIEW

The Government will review the draft submittal as well as the completed work. Subsequent to such review, the Contractor shall accomplish any corrections which may be directed as the result of the Government review.

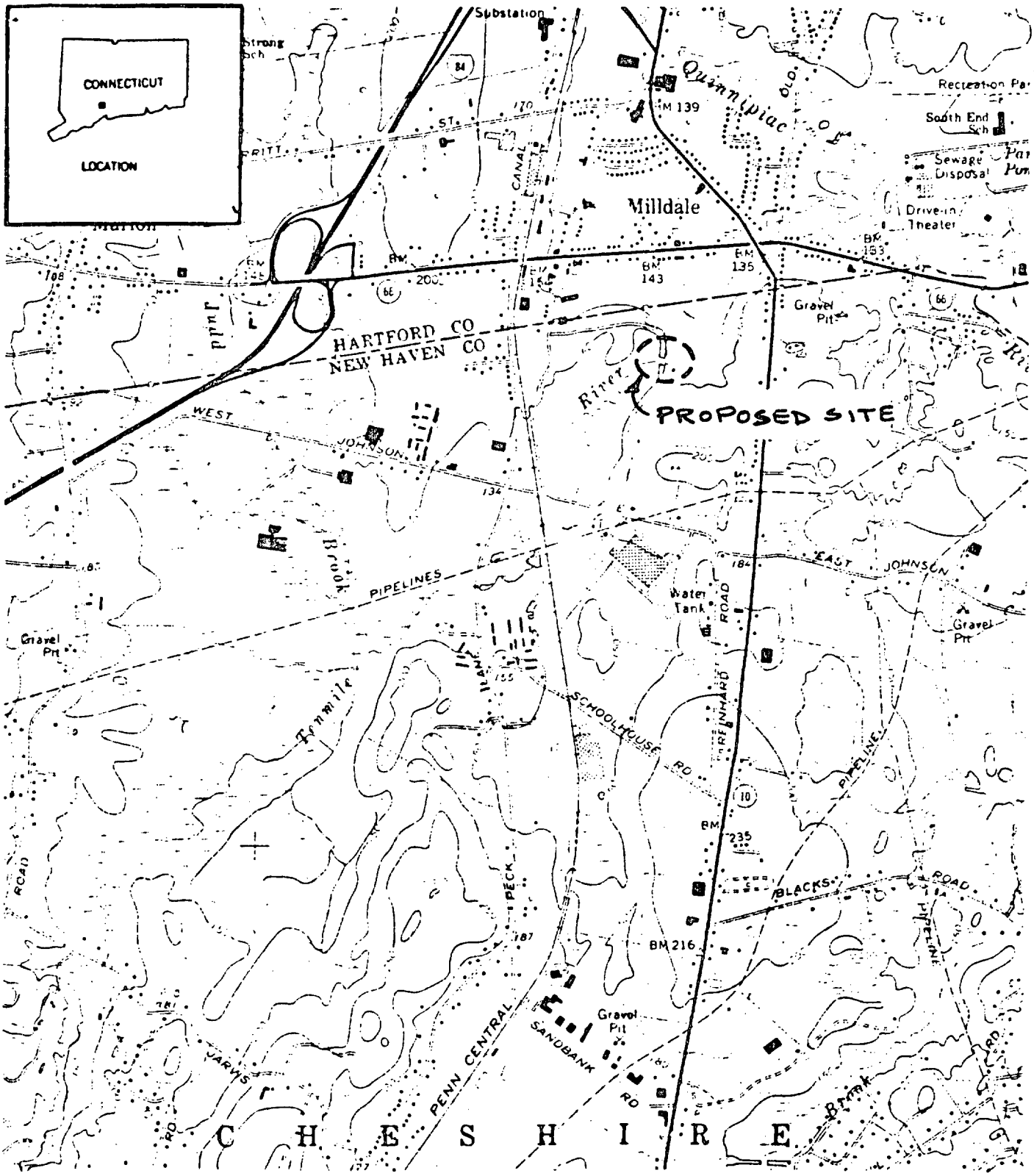
7. COMPLETION SCHEDULE

Services under this delivery order shall start within 15 calendar days after receipt of delivery order. Duration of field work is estimated to be five work days. The geotechnical report shall be submitted in draft format for review (by the Government), postmarked no later than seven calendar days after completion of the field work. Government review will take approximately ten calendar days from receipt of draft report. The final geotechnical report shall be submitted postmarked no later than seven calendar days after receipt of draft report with Government comments.

8. QUALITY CONTROL

You will be held responsible for the quality of the maps submitted and for all damages caused the Government as a result of your negligence in the performance of any services furnished under the contract.

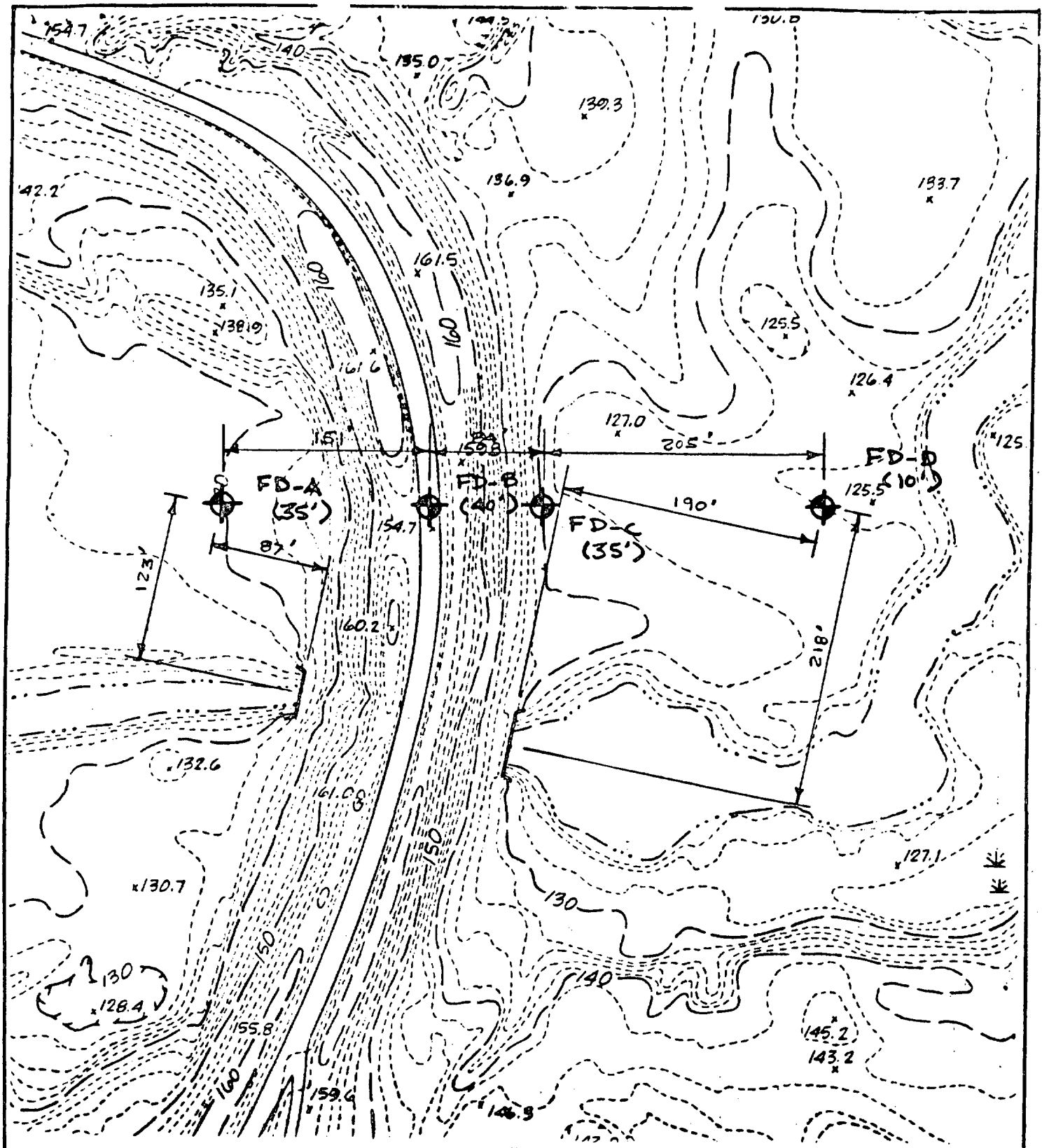
Although submissions required by your contract are technically reviewed by the Government, it is emphasized that your work must be prosecuted using proper internal controls and review procedures. The letter of transmittal for each submission which you make shall include a certification that the submission has been subjected to your own review and coordination procedures to insure (a) completeness for each discipline commensurate with the level of effort required for that submission, (b) elimination of conflicts, errors and omissions, and (c) the overall professional and technical accuracy of the submission. Documents which are significantly deficient in any of these areas will be returned to you for correction and/or upgrading prior to our completing our review. Contract submission dates will not be extended if a resubmission of draft material is required for this reason.



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

DES. BY	TEN MILE RIVER
DR. BY	CHESHIRE, CONNECTICUT
CK. BY	LOCATION PLAN

GEOTECH. ENG. BR. SCALE: 1:25000
SK. NO. 1 DATE: 3 Apr 65



LEGEND

FD-2 — Exploration Number

——— Exploration Location

(15') — Proposed Depth of Exploration

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASS.

DES. BY	TEN MILE RIVER
DR. BY	CHESHIRE, CONNECTICUT
CK. BY	EXPLORATION PLAN
GEOTECH. ENG. BR.	SCALE: 1" = 100'
SK. NO. 2	DATE: 5 Apr. 65

APPENDIX B

Safety Reports

EASTERN GEOTECHNICAL ASSOCIATES

WEEKLY SAFETY MEETING

TO: Safety Office, NED

FROM: Field Engineer
THRU: Project Engineer

Date held 6-17-85
Time 1200 hrs.

Weekly safety meeting was held this date for the following personnel:
Contract No. DACW 33-83-D-0006, W. O. No. 0029

Personnel present:
J. Courtney
Frank Swiatek
Walter Sowa

Conducted By: John Courtney

1. Subjects discussed Note, delete, or add):

- ✓ Individual Protective Equipment - Ear protection, hard hats
- ✓ Prevention of Falls -
- ✓ Safe Lifting Techniques -
- Emergency Communications -
- Fire Prevention -
- Sanitation, First Aid -
- ✓ Tripping Hazards - trash, hose, nails in lumber -
- Staging, Ladders, Concrete Forms -
- ✓ Hand Tools -
- Portable Power Tools -
- Woodworking Machinery -
- Equipment Maintenance Zero defects) -
- ✓ Hoisting Equipment -
- ✓ Ropes, Hooks, Chains and Slings -
- Electrical Grounding, Temporary Wiring -
- Lockouts for safe clearance procedures -
- Electrical, pressure, moving parts -
- Welding -
- Excavations -
- ✓ Loose Rock and Steep Slopes -
- Explosives -
- ✓ Water Safety -
- Other -

Prepared by: J. Courtney
Field Engineer

2. Exposure: 0 hours start of project

Signature: J. Courtney
Project Engineer

3. Forwarded: NED, Waltham, MA

EASTERN GEOTECHNICAL ASSOCIATES

WEEKLY SAFETY MEETING

TO: Safety Office, NED

FROM: Field Engineer
THRU: Project Engineer

Date held 6-18-85
Time 1930 hrs.

Weekly safety meeting was held this date for the following personnel:
Contract No. DACW 33-83-D-0006, W. O. No.

Personnel present:
Laleh Daraie
Frank Sciotch
Walter Souza

Conducted By: Laleh Daraie

1. Subjects discussed Note, delete, or add):

Individual Protective Equipment - Ear protection, hard hats
Prevention of Falls -
Safe Lifting Techniques -
Emergency Communications -
Fire Prevention -
Sanitation, First Aid -
Tripping Hazards - trash, hose, nails in lumber -
Staging, Ladders, Concrete Forms -
Hand Tools -
Portable Power Tools -
Woodworking Machinery -
Equipment Maintenance Zero defects) -
Hoisting Equipment -
Ropes, Hooks, Chains and Slings -
Electrical Grounding, Temporary Wiring -
Lockouts for safe clearance procedures -
Electrical, pressure, moving parts -
Welding -
Excavations -
Loose Rock and Steep Slopes -
Explosives -
Water Safety -
Other -

Prepared by: Laleh Daraie
Field Engineer

2. Exposure:

JOB TOTAL: 63 MANHOURS 6-17 + 6-18
24 on 6-17 and 39 on 6-18 , 3 people

Signature:
Project Engineer

3. Forwarded: NED, Waltham, MA

APPENDIX C

Chain of Custody Log

EASTERN GEOTECHNICAL ASSOCIATES

CHAIN OF CUSTODY LOG

Project: TEN MILE RIVER, CHESHIRE, CONN.

Contract DACW-33-83-D-0006, W.O. #0029

Items: Jar Samples 36

Bottles _____

Core Boxes _____

Sampling Logs _____

	Date & Time Received	Date & Time Transfered	Comments	Condition
1.	AS SAMPLED	6-27-85 0800	JCC.	
2.	6/27/85 JCC			
3.				
4.				
5.				

APPENDIX D

Field Logs of Test Borings

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. 0029

Site TEN MILE RIVER CHESHIRE CONN. Page 1 of 5 Pages

Hole No. FD85-1 B Diam. (Casing) 4" ID AUGER Boring Started 6-17-85

Co-ordinates: N _____ E _____ Boring Completed 6-17-85

Drilled by EASTERN GEOTECHNICAL ASSOC. INC. Report Submitted _____

Purpose of Exploration DETERMING FOUNDATION CONDITIONS FOR PROPOSED CHANNEL IMPROVEMENTS

Elevation Top of Hole 154.0 ± M.S.L.
Total Overburden Drilled 40.0 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole 114.0 ± M.S.L.
Total Rock Drilled — Feet
Total Depth of Hole 40.0 Feet
Core Recovered — %
Core Recovered — Ft.: ____ Diam. ____ In.
Soil Samples 2 1/2 In. Diam. 12 No.
Soil Samples ____ In. Diam. ____ No.

Casing Left in Place NONE Feet

Water Table Depth 30.0 Ft

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	40.0	4" Hollow Stem Auger, 2'1/2" x 5'
		spoon sample continuous.

INDEX

Ground Water	Page 5	Back of Page ____
Boring Location Sketch	Page 5	Back of Page ____
Overburden Record	Page 2-4	Page ____
Rock Drilling	—	Page ____
		Page ____
		Page ____
		Page ____

Prepared by John Crowther
Field Data Lab. Data

Submitted by _____ _____

NED FORM DEC 69 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U.S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site TEN MILE RIVER, CHESHIRE, CONN. Page 2 of 5 Pages

Boring No. ED-85-1 Desig. B Diam. (Casing) 4" Auger

Co-ordinates. N _____ E _____

Elevation Top of Boring 154. ± M.S.L.
Total Overburden Drilled 40.0 Feet
Elevation Top of Rock – M.S.L.
Total Rock Drilled – Feet
Elevation Bottom of Boring 114.0 ± M.S.L.
Total Depth of Boring 40.0 Feet
Core Recovered – % No. Boxes _____
Core Recovered – Ft : _____ Diam. ____ In.
Soil Samples 2 1/2 In. Diam. 12 No.
Soil Samples _____ In. Diam. ____ No.

Hammer Wt. 300 lbs. Boring Started 6-17-85
Hammer Drop 18" Boring Completed 6-17-85
Casing Left –
Subsurface Water Data _____ Page 5
Obs. Well –
Drilled By EASTERN GEOTECHNICAL ASSOCIATES INC.
Mfg. Des. Drill MOBILE DRILL CO
Inspected By: J. CROUTHER
Classification By: J. CROUTHER
Classification By: _____

DEPTH 1"=2.0	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
			0.0	15	DROVE 2 1/2" ID x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 0.0 TO 5.0 FT.	SAND coarse to fine, mostly fine, less than 5% subrounded to subangular gravel, 5-8% non-plastic fines, reddish brown (SP-SM)
	1	2 1/2"		20		
				19		
				24	AUGERED TO 5.0 FT. WITH 4" ID HOLLOW STEM AUGERS	
5.0			5.0	24	2.0 FT RECOVERY	
			5.0	15	DROVE 2 1/2" ID x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 5.0 TO 10.0 FT.	SAND coarse to fine, mostly fine, less than 5% subrounded to subangular gravel, 5-8% non plastic fines, reddish brown (SP-SM)
				22		
	2	2 1/2"		32		
				26		
				34	AUGERED TO 10.0 FT. WITH 4" ID. HOLLOW STEM AUGERS 3.0 FT RECOVERY	
10.0			10.0			

GENERAL REMARKS: Elevations of borings taken from plan

Site TEN MILE RIVER CHESHIRE CONN.

Boring No. FD-85-1 B

Page 3 of 5

DEPTH	CORE/SAMPLE NO.	CORE/SAMPLE SIZE	CORE/SAMPLE DEPTH RUNS	BLOWS PER FT CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
10.0			10.0	26	DROVE 2½" ID x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 10.0 TO 15.0 FT	SAND coarse to fine, mostly fine, less than 5% subrounded to subangular gravel, 5-8% nonplastic fines, reddish brown (SP-SM)
	3	2½		43		
				36		
				41	AUGERED TO 15.0 FT WITH 4" ID. HOLLOW STEM AUGER	
15.0			15.0	44	2.5 ft. recovery	
			15.0	34	DROVE 2½" ID x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 15.0 TO 20.0 FT.	SAND coarse to fine, mostly fine, less than 5% subrounded to subangular gravel, 5-8% nonplastic fines, reddish brown. (SP-SM)
	4	2½		48		
				58		
				78	AUGERED TO 20.0 FT WITH 4" ID HOLLOW STEM AUGER	[18.0 TO 20.0 FT.; 5-7% subrounded to subangular gravel]
20.0			20.0	92	2.0 ft. recovery	
			20.0	36	DROVE 2½" ID. x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 20.0 TO 25.0 FT.	SAND coarse to fine, mostly fine, less than 5% sub rounded to subangular gravel, 5-8% non plastic fines, reddish brown (SP-SM)
	5	2½		94		
				146		[22.0 - 24.0 FT.; 5-10% subrounded to subangular gravel]
				92	AUGERED TO 25.0 FT WITH 4" ID HOLLOW STEM AUGER	
25.0			25.0	44	2.5 ft. recovery	24.0 24.0
			25.0	17	DROVE 2½" ID x 5 FT. SOLID SPOON WITH 300 lb. HAMMER FROM 25.0 TO 30.0 FT.	SILTY SAND medium to fine, mostly fine, 10-15% nonplastic fines, reddish brown (SM)
	6	2½		14		

FIG. No. 2C

Site TEN MILE RIVER CHESHIRE CONN. | Boring No. FD-85-1 B | Page 4 of 5

DEPTH	CORE/SAMPLE NO.	CORE/SAMPLE SIZE	CORE/SAMPLE DEPTH RANGE	BLOWS PER FT / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
				21		
	6			46	AUGERED TO 30.0 FT WITH 4" ID HOLLOW STEM AUGER	
30.0			30.0	65	3.5 ft. recovery	
			30.0	21	DROVE 2½" ID x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 30.0 TO 35.0 FT.	SILTY SAND medium to fine, mostly fine, ∠2% coarse sand, 10-15% non plastic fines, reddish brown. (SM)
				14		
	7	2½		15		
				17	AUGERED TO 35.0 FT WITH 4" ID HOLLOW STEM AUGER	
35.0			35.0	17	30 ft. recovery	SILTY SAND medium to fine, mostly fine, ∠2% coarse sand, 10-12% non plastic fines, reddish brown. (SM)
			35.0	15	DROVE 2½" ID x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 35.0 TO 40.0 FT.	
				19		
	8	2½		58		37.0 SILTY SAND medium to fine, mostly fine, ∠2% coarse sand, 10-15% non plastic fines, trace organics, grey brown (SM) 37.0
				61		
				68		
40.0			40.0		3.5 ft. recovery	
					END OF BORING AT 40.0 FT	

Site: TEN MILE RIVER CHESHIRE COND

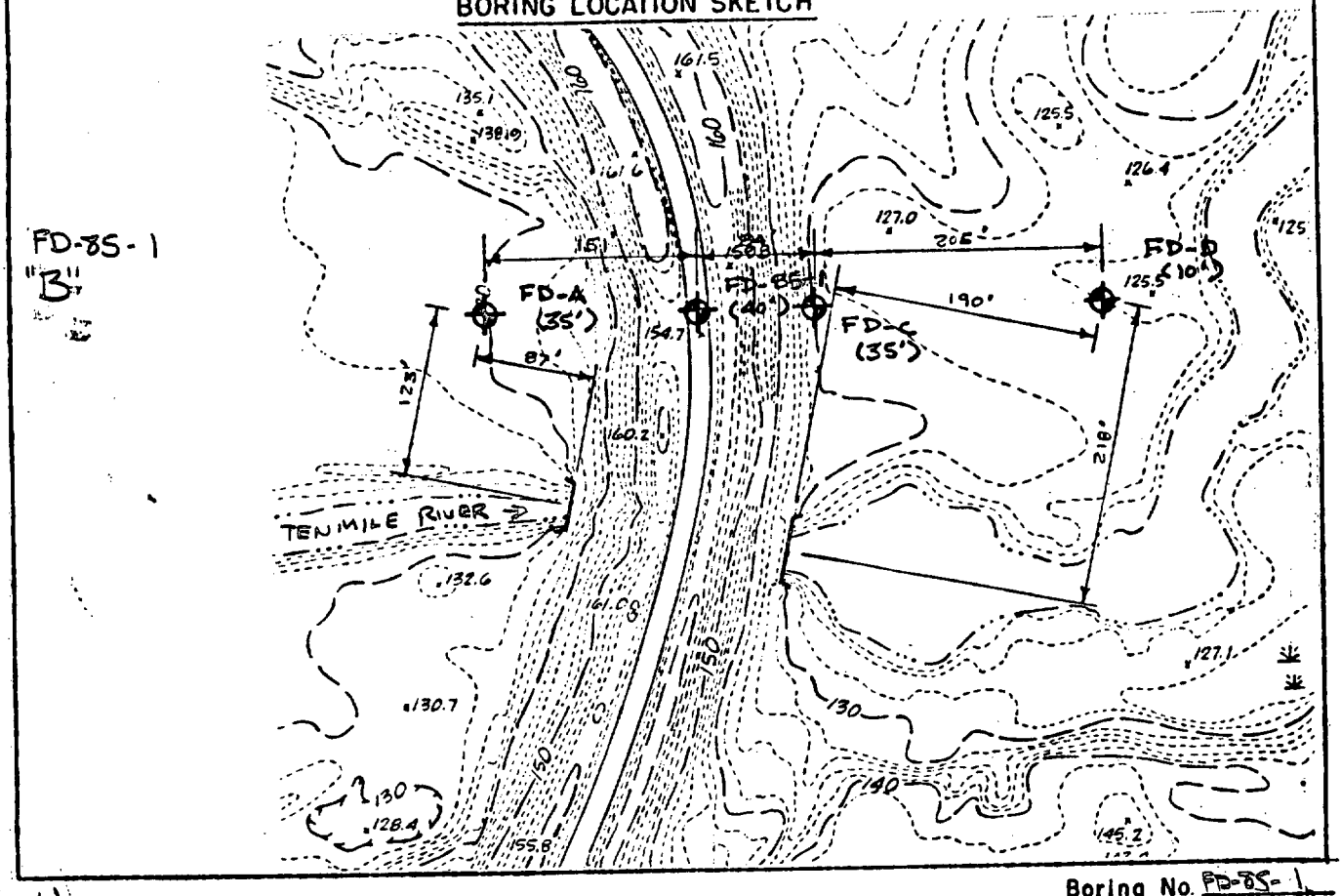
Boring No: FD-85-1 "B"

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
6-17-85	1900 hrs	35.0	40.0	30.0	124.0 ±	Elevations of borings taken from plan, probable accuracy within 1 ft ±

Note: Depths are in feet below original ground

BORING LOCATION SKETCH



FORM 59 (Test)
AR 715

Boring No. FD-85-1 "B"

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. 0029

Site TEN MILE RIVER CHESHIRE CONN. Page 1 of 5 Pages

Hole No. FD35-2 A Diam. (Casing) 4" ID AUGER Boring Started 6-17-85

Co-ordinates: N _____ E _____ Boring Completed 6-18-85

Drilled by EASTERN GEOTECHNICAL ASSOC. INC. Report Submitted _____

Purpose of Exploration DETERMINE FOUNDATION CONDITIONS FOR PROPOSED CHANNEL IMPROVEMENTS

Elevation Top of Hole 130.0 ± M.S.L. Casing Left in Place NONE Feet
Total Overburden Drilled 35.0 Feet
Elevation Top of Rock - M.S.L.
Elevation Bottom of Hole 95.0 ± M.S.L.
Total Rock Drilled - Feet
Total Depth of Hole 35.0 Feet
Core Recovered - %
Core Recovered - Ft.: ____ Diam. ____ In.
Soil Samples 2 1/2 In. Diam. 12 No.
Soil Samples ____ In. Diam. ____ No. Water Table Depth 8.0 ft.

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	35.0	4" Hollow Stem Auger, 2 1/2" x 5'
		Spoon sample continuos

INDEX

Prepared by John Crowther
Field Data Lab. Data

Submitted by _____

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site TEN MILE RIVER CHESHIRE (QNW) Page 2 of 5 Pages

Boring No. ED85-2 Desig. A Diam. (Casing) 4" Auger

Co-ordinates: N _____ E _____

Elevation Top of Boring 130.0 ± M.S.L.
Total Overburden Drilled 35.0 Feet
Elevation Top of Rock – M.S.L.
Total Rock Drilled – Feet
Elevation Bottom of Boring 95.0 M.S.L.
Total Depth of Boring 35.0 Feet
Core Recovered – % No. Boxes _____
Core Recovered – Ft : _____ Diam. ____ In.
Soil Samples 2 1/2 In. Diam. 12 No.
Soil Samples _____ In. Diam. ____ No.

Hammer Wt. 300lb
Hammer Drop 18"
Casing Left –
Subsurface Water Data _____ Page 5
Obs. Well _____
Drilled By EASTERN GEOTECHNICAL ASSOC. INC.
Mfg. Des. Drill MOBILE DRILL
Inspected By: J. Crowther
Classification By: J. Crowther
Classification By: _____

Boring Started 6-17-85
Boring Completed 6-18-85

DEPTH 1"=2.0'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
			0.0	10	DROVE 2 1/2" I.D. x 5 FT. SOLIDSPOON WITH 300 lb HAMMER FROM 0.0 TO 5.0 FT.	SAND medium to fine, mostly fine, 3-8% nonplastic fines, reddish brown (SP)
	1	2 1/2"		10		
				14		
				17	AUGERED TO 5.0 FT. WITH 4" ID HOLLOW STEM AUGER	
5.0			5.0	21	3.0 Ft recovery	
			5.0	19	DROVE 2 1/2" I.D. x 5 FT. SOLID SPOON WITH 300 lb. HAMMER FROM 0.0 TO 5.0 FT.	SAND coarse to fine, mostly fine, 7-12% non plastic fines, reddish brown and grey brown (SP-SM)
	2	2 1/2"		15		
				5		
				7	AUGERED TO 10.0 FT WITH 4" ID HOLLOW STEM AUGER	
10.0			10.0	26	2.0 Ft. recovery	

GENERAL REMARKS: Elevations of borings taken from plan

Site TEN MILE RIVER CHESHIRE, CONN | Boring No. FD-85-2 A | Page 3 of 5

DEPTH	CORE/SAMPLE NO.	CORE/SAMPLE SIZE	CORE/SAMPLE DEPTH RANGE	BLOWS PER FT / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
			10.0	48	DROVE 2½" ID x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 10.0 to 15.0 FT	SAND coarse to fine, mostly fine, 3-5% subrounded to subangular gravel, 7-12% non-plastic fines, reddish brown (SP-SM)
	3	2½"		46		
				27		
				27	AUGERED TO 15.0 FT WITH 4" ID HOLLOW STEM AUGER	
15.0			15.0	24	2.5 ft recovery	
			15.0	34	Drove 2½" ID x 5 FT. SOLID SPOON WITH 300lb. HAMMER FROM 15.0 TO 20.10 FT.	SAND coarse to fine, mostly fine, 3-5% subrounded to subangular gravel, 7-12% non plastic Fines, reddish brown to brown (SP-SM)
	4	2½"		51		
				34		[16.0 to 17.0 ft. 5-8% gravel and 10-15% non plastic fines]
				29	AUGERED TO 20.0 FT WITH 4" ID HOLLOW STEM AUGER	
20.0			20.0	32	3.5 ft. recovery	
			20.0	12	DROVE 2½" ID x 5 FT. SOLID SPOON WITH 300lb. HAMMER FROM 20.0 TO 25.0 FT	20.0 SILTY SAND coarse to fine, mostly fine, 10-15% non plastic fines, reddish brown (SM) 20.0
	5	2½"		21		
				19		
				29	AUGERED TO 25.0 FT WITH 4" ID HOLLOW STEM AUGER	
25.0			25.0	26	2.25 Ft recovery	
			25.0	10	DROVE 2½" ID x 5 FT. SOLID SPOON WITH 300lb HAMMER FROM 25.0 TO 30.0 FT.	26.0 SAND 26.0
	6			19		

Site TEXAMILE RIVER
CHESHIRE, CONN.

Boring No. FD-85-2 A

Page 4 of 5

DEPTH (ft.)	CORE/SAMPLE NO.	CORE/SAMPLE SIZE	CORE/SAMPLE DEPTH RANGE	BLOWS PER FT CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	6	2½"		22	AUGERED TO 30.0 FT. WITH 4" ID HOLLOW STEM AUGER	SAND coarse to fine mostly medium to fine, 3 to 8% nonplastic fines brown reddish brown (SP)
				39		
			30.0	27	2.25 ft. recovery	
30.0			30.0	26	DROVE 2½" x 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 30.0 TO 35.0 FT	
				29		
	7	2½"		41		32.0 SAND coarse to fine mostly medium to fine, 3-5% subrounded to sub angular gravel, 7-12% nonplastic fines, reddish brown (SP-SM)
				46		
35.0			35.0	55		
					END OF BOZING AT 35.0 ft.	

FIG. No. 2C

Site: TEN MILE RIVER, CHESHIRE CONN

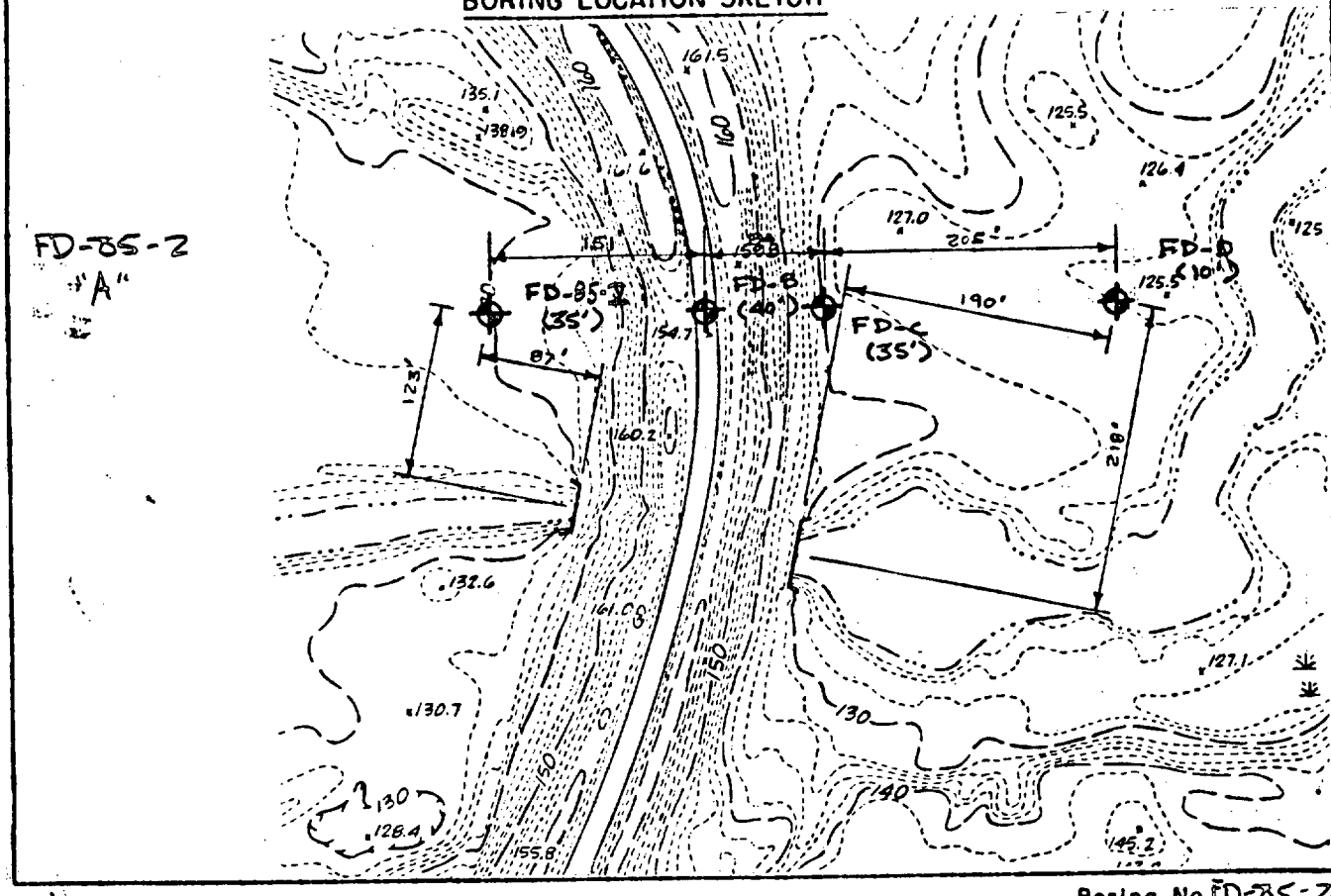
Boring No: FD-85-2 A

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
6-1-85	1000hrs	30.0	35.0	8.0	122.0±	Elevations of borings taken from plan probable accuracy within 1 ft. ±

Note: Depths are in feet below original ground

BORING LOCATION SKETCH



FORM AR 715-59 (Test)

Boring No. FD-85-2 "A"

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. 0029

Site TEN MILE RIVER CHESHIRE CONN — Page 1 of 5 Pages

Hole No. ED-85-3C Diam. (Casing) 4" ID Auger — Boring Started 6-15-85

Co-ordinates: N _____ E _____ — Boring Completed 6-18-85

Drilled by EASTERN GEOTECHNICAL ASSOC. INC. — Report Submitted _____

Purpose of Exploration DETERMINE FOUNDATION CONDITIONS FOR PROPOSED CHANNEL IMPROVEMENTS

Elevation Top of Hole 130.0 ± M.S.L. — Casing Left in Place NONE Feet
Total Overburden Drilled 35.0 Feet
Elevation Top of Rock - M.S.L.
Elevation Bottom of Hole 95.0 ± M.S.L.
Total Rock Drilled - Feet
Total Depth of Hole 35.0 Feet
Core Recovered - %
Core Recovered - Ft.; ____ Diam. ____ In.
Soil Samples 2 1/2 In. Diam. 7 No.
Soil Samples _____ In. Diam. ____ No. — Water Table Depth 6.0

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	35.0	4" Hollow Stem Auger, 2 1/2" X 5'
		Spoon sample continues

INDEX

Prepared by John Crowther
Field Data — Lab. Data

Submitted by _____

NED FORM DEC 63 121 — REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site TEN MILE RIVER CHESHIRE CONN. Page 2 of 5 Pages

Boring No. FD-85-3 Desig. C Diam. (Casing) _____

Co-ordinates. N _____ E _____

Elevation Top of Boring 130.0 ± M.S.L.
Total Overburden Drilled 35.0 Feet
Elevation Top of Rock – M.S.L.
Total Rock Drilled – Feet
Elevation Bottom of Boring 95.0 ± M.S.L.
Total Depth of Boring 35.0 Feet
Core Recovered – % No. Boxes _____
Core Recovered – Ft : _____ Diam. ____ In.
Soil Samples 2 1/2 In. Diam. 7 No.
Soil Samples _____ In. Diam. ____ No.

Hammer Wt. 300 lbs
Hammer Drop 18"
Casing Left –
Subsurface Water Data _____
Obs. Well –
Drilled By EASTERN GEOTECHNICAL ASSOC. INC.
Mfg. Des. Drill MOBILE DRILL
Inspected By: L. Daraie
Classification By: L. Daraie
Classification By: J. Crowther

Boring Started 6-18-85
Boring Completed 6-18-85
Page 5

DEPTH	CORE/SAMPLE NO.	CORE/SAMPLE SIZE	CORE/SAMPLE DEPTH RANGE	BLOWS PER FT. / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
			0.0	9	DROVE 2 1/2" ID × 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 0.0 TO 5.0 FT.	SAND fine, 7-12% nonplastic fines reddish brown (SP-SM)
	1	2 1/2"		12		
				10		
				10	AUGERED TO 5.0 FT WITH 4" ID HOLLOW STEM AUGER	
5.0			5.0	22	2.0 ft. recovery	2.0 2.0
			5.0	33	DROVE 2 1/2" ID × 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 5.0 TO 10.0 FT.	SAND coarse to fine, mostly medium to fine, trace gravel, 7-12% non plastic fines, reddish brown, brown (SP-SM)
				53		
	2	2 1/2"		55		
				44	AUGERED TO 10.0 FT WITH 4" ID HOLLOW STEM AUGER	
10.0			10.0	56	2.5 ft recovery	

GENERAL REMARKS: Elevations of borings taken from plan

Site TEN MILE RIVER CHESHIRE CONN	Boring No. FD-85-3 C	

DEPTH	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT / CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	3	2½'	10.0 – 15.0	24, 33, 26, 36, 48	DROVE 2½" ID × 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 10.0 TO 15.0 FT. AUGERED TO 15.0 FT WITH 4" ID HOLLOW STEM AUGER. 3.0 ft recovery	SAND medium to fine, mostly fine, trace coarse sand 3-8% nonplastic fines, brown (SP)
15.0	4	2½"	15.0 – 20.0	46, 51, 39, 41, 56	DROVE 2½" ID × 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 15.0 TO 20.0 FT. AUGERED TO 20.0 FT WITH 4" ID HOLLOW STEM AUGER. 3.0 ft. recovery	SAND medium to fine, mostly fine, trace coarse sand, <5% nonplastic fines brown (SP)
20.0	5	2½'	20.0 – 25.0	33, 44, 56, 77, 50	DROVE 2½" ID × 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 20.0 TO 25.0 FT. AUGERED TO 25.0 FT WITH 4" ID HOLLOW STEM AUGER. 2.75 ft. recovery	SAND medium to fine mostly fine, trace coarse sand, <5% nonplastic fines brown (SP)
25.0	6		25.0 –	26, 29	DROVE 2½" I.D. × 5 FT. SOLID SPOON WITH 300 lb HAMMER FROM 25.0 TO 30.0 FT.	

FIG. No. 2C

Site TEN MILE RIVER CHESHIRE CONN.

Boring No. FD-85-3 C

DEPTH (ft)	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT CORE RECVY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
	6		30.0	36		SAND coarse to fine, mostly medium to fine, 3-5% non plastic fines, brown (SP)
				48	AUGERED TO 30.0 FT WITH 4" ID HOLLOW STEM AUGER	
				50	1.0 ft recovery	
	7	2½"	35.0	24	DROVE 2½" ID. X 5 FT. SOLID SPOON WITH 300lb HAMMER FROM 30.0 TO 35.0 FT.	SAND coarse to fine, mostly medium to fine, <5% nonplastic fines brown (SP)
				31		
				43		
				39		
				37	0.75ft recovery	
					END OF BORING AT 35.0 ft.	

FIG. No. 2C

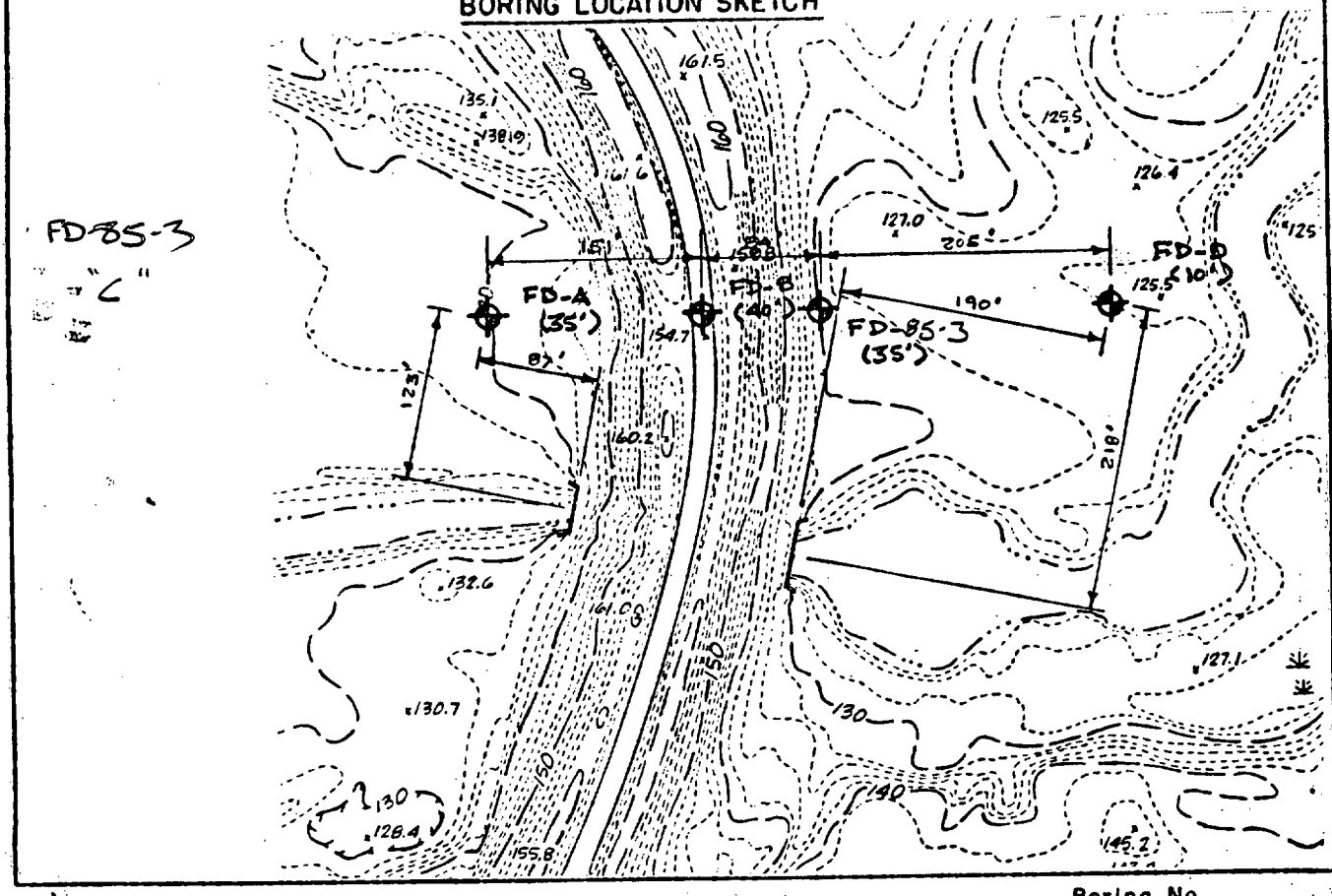
Site: TENMILE RIVER CHESHIRE CONN
Boring No: FD-85-3 "C"

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
6-18-85	1515 hrs	30.0	35.0	6.0	124.0±	Elevations of borings taken from plan probable accuracy within 1 Ft ±

Note: Depths are in feet below original ground

BORING LOCATION SKETCH



FORM AR 715-59 (Test)

Boring No. _____

CORPS OF ENGINEERS, U. S. ARMY
NEW ENGLAND DIVISION
FOUNDATION AND MATERIALS BRANCH

FIELD LOG OF TEST BORING

PROJECT NO. 0029

Site TEN MILE RIVER CHESHIRE CONN — Page 1 of 3 Pages

Hole No. FD-85-4 "D" Diam. (Casing) 4" Auger — Boring Started 6-15-85

Co-ordinates: N _____ E _____ — Boring Completed 6-18-85

Drilled by EASTERN GEOTECHNICAL ASSOC. INC. — Report Submitted _____

Purpose of Exploration DETERMINE FOUNDATION CONDITIONS FOR PROPOSED CHANNEL IMPROVEMENTS

Elevation Top of Hole 126.0 ± M.S.L.
Total Overburden Drilled 10.0 Feet
Elevation Top of Rock — M.S.L.
Elevation Bottom of Hole 116.0 ± M.S.L.
Total Rock Drilled — Feet
Total Depth of Hole 10.0 Feet
Core Recovered — %
Core Recovered — Ft.; — Diam. — In.
Soil Samples 2 1/2 In. Diam. 4 No.
Soil Samples — In. Diam. — No.

Casing Left in Place NONE Feet
Water Table Depth 6.0

Depth From	Depth To	Method of Drilling and Type of Bit Used
0.0	10.0	4" Hollow Stem Auger, 2 1/2" x 5'
		Spoon sample continuous

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Ground Water Page 3 Back of Page ____
Boring Location Sketch Page 3 Back of Page ____
Overburden Record Page 2 Page ____
Rock Drilling _____ Page ____
_____ Page ____
_____ Page ____
_____ Page ____

Prepared by John Cranton
Field Data Lab. Data

Submitted by _____

NED FORM DEC 63 121 REPLACES EDITION OF JUN 51 WHICH MAY BE USED UNTIL EXHAUSTED

U. S. ARMY
CORPS OF ENGINEERS
NEW ENGLAND DIVISION

FIELD LOG OF TEST BORING

Site TENMILE RIVER CHESHIRE CONN Page 1 of ___ Pages

Boring No. FD-85-4 Desig. D Diam. (Casing) 4" Auger

Co-ordinates. N _____ E _____

Elevation Top of Boring 126.0 ± M.S.L. Hammer Wt. 300 lbs Boring Started 6-18-85

Total Overburden Drilled 10.0 Feet Hammer Drop 18" Boring Completed 6-18-85

Elevation Top of Rock - M.S.L. Casing Left -

Total Rock Drilled - Feet Subsurface Water Data _____ Page 3

Elevation Bottom of Boring 116.0 ± M.S.L. Obs. Well _____

Total Depth of Boring 10.0 Feet Drilled By EASTERN GEOTECHNICAL ASSOC.

Core Recovered - % No. Boxes _____ Mfg. Des. Drill MOBILE DRILL

Core Recovered _____ Ft : ____ Diam. ____ In. Inspected By: L. Daraie

Soil Samples 2½ In. Diam. 4 No. Classification By: L. Daraie

Soil Samples _____ In. Diam. ____ No. Classification By: J. Crowther

DEPTH 1"=2.0'	CORE/SAMPLE NO.	SIZE	DEPTH RANGE	BLOWS PER FT. CORE REC'VY	SAMPLING AND CORING OPERATIONS	CLASSIFICATION OF MATERIALS
			0.0	4	DROVE 2½" ID SOLID SPOON WITH 300 lb HAMMER FROM 0.0 TO 5.0 FT.	SILTY SAND fine sand 15-20% nonplastic fines trace organics, dark brown (SM)
				4		1.5 1.5
	1			5		SAND coarse to fine, mostly medium to fine <5% nonplastic fines brown (SP)
				7	AUGERED TO 5.0 FT WITH 4" ID HOLLOW STEM AUGER	
			5.0	14	2.0 ft recovery	
			5.0	22	DROVE 2½" ID SOLID SPOON WITH 300 lb HAMMER FROM 5.0 TO 10.0 FT.	SAND medium to fine mostly fine, 3-8% nonplastic fines, brown (SP)
				34		
	2			58		
				48		
			10.0	43	3.0 ft recovery	

GENERAL REMARKS: END OF BORING AT 10.0 FT.

Site: TEN MILE RIVER CHESHIRE CONN

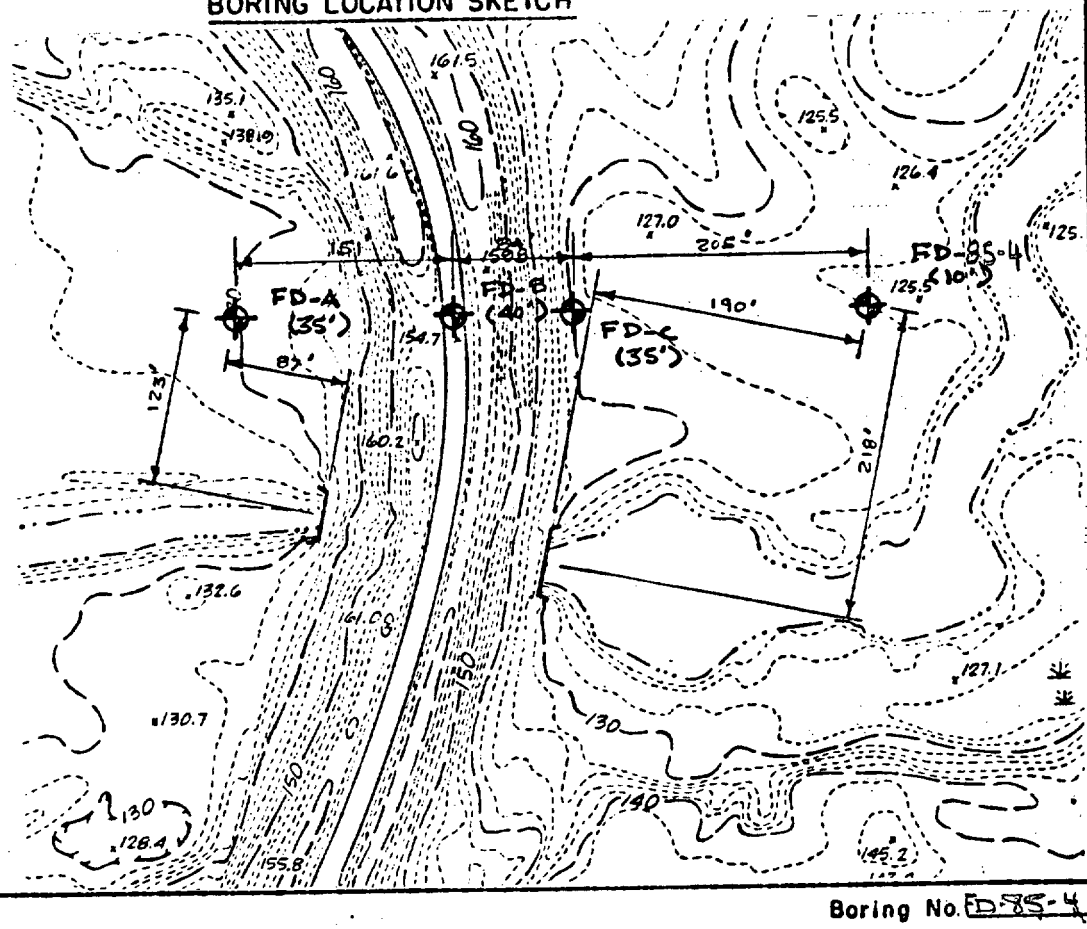
Boring No: FD-85-4 "D"

SUBSURFACE WATER OBSERVATIONS

DATE	TIME	DEPTH-BOT. OF CASING	DEPTH-BOT. OF BORING	DEPTH TO WATER	ELEVATION WATER	REMARKS
6-1885	1800 hrs	5 Ft.	10 Ft.	6.0 Ft.	121.0±	Elevations of borings taken from plan, probable accuracy within 1 Ft.±

Note: Depths are in feet below original ground.

BORING LOCATION SKETCH



FORM AR 715-59 (Test)

Boring No. FD-85-4 "D"